Claims

1. An optical element sealing structure comprising:

a mounting body provided with a light transmitting section through which light traveling along a predetermined optical path passes;

an optical element having an optical surface receiving or emitting light which is directed to the light transmitting section, and is mounted on the mounting body in such a state that the optical element blocks the light transmitting section at one end portion in an axis direction thereof; and

a sealing body that is formed in a region excluding the optical path, and seals the optical element mounted on the mounting body.

2. The optical element sealing structure of claim 1, wherein a material that can increase the environmental resistance of the optical element is added to the sealing body.

3. The optical element sealing structure of claim 1 or 2, further comprising:

a connection body for establishing an electrical connection to the optical element; and

a wire for establishing an electrical connection

between the optical element and the connection body,

wherein a linear expansion coefficient of the sealing body is set to be almost equal to a linear expansion coefficient of the wire or the optical element.

4. The optical element sealing structure of any one of claims 1 to 3, wherein the sealing body is formed in a region of the optical element opposite to the mounting body.

5. The optical element sealing structure of any one of claims 1 to 4, further comprising a transmitting body whose light transmittance is higher than that of the sealing body,

wherein the transmitting body blocks the other end portion of the light transmitting section in the axis direction.

6. The optical element sealing structure of claim 5, wherein the sealing body and the transmitting body are made of a molding resin, and are formed by transfer molding.

7. The optical element sealing structure of claim 6, wherein a first contact area at which the transmitting

body is in contact with the mounting body is larger than a second contact area at which the transmitting body is in contact with the sealing body.

8. The optical element sealing structure of claim 6 or 7, wherein at least a part of an outer peripheral portion of the transmitting body is in contact with the mounting body.

9. The optical element sealing structure of any one of claims 6 to 8, wherein both the sealing body and the mounting body are covered with the transmitting body.

10. The optical element sealing structure of claim 5, wherein the transmitting body is attached to the mounting body or the sealing body using an adhesive.

11. The optical element sealing structure of claim 10, wherein the adhesive has a light transmitting property and a refractive index higher than that of air, and is filled between the optical surface of the optical element and the transmitting body.

12. The optical element sealing structure of claim 10 or 11, wherein, in at least either the transmitting body or

the mounting body, a positioning section is formed for positioning between the transmitting body and the mounting body.

13. The optical element sealing structure of claim 12, wherein the light transmitting section is formed with a through hole that penetrates through the mounting body along the optical path,

the transmitting body is formed with a positioning section that fits into the through hole, and

the positioning section is tapered in shape with which the outer diameter is reduced toward the light-receiving surface of the optical element while the positioning section is fitted into the through hole.

14. The optical element sealing structure of any one of claims 10 to 13, wherein the attachment area at which the transmitting body is attached to the mounting body or the sealing body is smaller than the surface area on a side where the sealing body is in contact with the mounting body.

15. The optical element sealing structure of any one of claims 5 to 14, wherein, in the transmitting body, a lens portion formed in the shape of lens is formed on the

optical path.

16. The optical element sealing structure of any one of claims 1 to 15, wherein the mounting body includes a lead frame and a sub mount, and

the optical element is mounted on the lead frame via the sub mount.

17. The optical element sealing structure of any one of claims 1 to 16, wherein the light transmitting section of the mounting body is formed with a light condensing section that narrows the optical path toward the optical surface of the optical element.

18. The optical element sealing structure of any one of claims 1 to 17, wherein, in the light transmitting section, an aperture is formed to extend along the optical path, an inner diameter thereof is increased as is away from the optical surface, and an inner surface thereof has a high light reflectivity.

19. The optical element sealing structure of any one of claims 1 to 18, wherein the mounting body is formed with an exposure surface that is exposed to the atmosphere around the sealing structure.

20. The optical element sealing structure of any one of claims 1 to 19, wherein the optical element is any one of a light-emitting diode, a semiconductor laser, and a photo diode.

21. An optical coupler comprising:

the sealing structure of the optical element of any one of claims 1 to 20, the optical coupler being capable of being optically coupled with a light transmitting medium.

22. An optical element sealing method for mounting on a mounting body an optical element having an optical surface receiving or emitting light, and sealing the optical element mounted on the mounting body using a molding resin, comprising:

a light transmitting section formation step of forming on the mounting body a light transmitting section though which light traveling along a predetermined optical path goes;

an optical element mounting step of mounting the optical element on the mounting body in such a state the optical surface is directed to the light transmitting section, and the optical element blocks the light

transmitting section at one end portion in an axis direction thereof; and

a sealing molding resin molding step of filling a mold with, in a state where the mounting body carrying thereon the optical element is attached to the mold, and in such a state that the mold blocks the light transmitting section at another end portion in the axis direction thereof, a sealing molding resin added with a filling material that increases the environmental resistance of the optical element.